

Appln. Serial No. 10/692,775
Amendment Dated December 15, 2005
Reply to Office Action Mailed June 2, 2005

REMARKS

In the Office Action dated June 2, 2005, the Specification and claims were objected to; and claims 1-20 were rejected under 35 U.S.C. § 102 over U.S. Patent No. 6,885,918 (Harmon).

OBJECTION TO SPECIFICATION AND CLAIMS

The Office Action objected to use of the term “*a priori*” as being unclear. Applicant respectfully submits that use of the term “*a priori*” in the Specification and claims would be understood by a person of ordinary skill in the art, especially when the term “*a priori*” is read in the context of the patent application. For example, as explained in the Background section of the application, a discussion of prior art controllers was provided in which the difficulty of sending pressure pulse signals to a downhole controller was explained. As explained by the Background section, to produce a response from a conventional controller, the controller must receive pressure signals that match *pre-programmed* pressure sequences within certain ranges of amplitudes and with changes at appropriate rates. However, under certain conditions, it would be difficult or impossible to transmit and receive such sequences in a well environment.

Thus, the problem as described in the Background section is that prior art controllers have to rely upon receiving a command sequence having a pre-programmed sequence (in other words, the prior art downhole controller must be pre-programmed with the pre-programmed sequence such that the controller knows the sequence and can recognize a received sequence). However, as explained in the Background section, transmitting a command sequence having the pre-programmed sequence may not be possible in certain conditions.

As stated in the Summary, some embodiments of the invention provide apparatus and methods to control a downhole tool remotely based on autocorrelation of command sequences, where repeating signals of *a priori* unknown or undefined shape can be correlated to themselves to reliably distinguish intentional changes from random fluctuations or other operations performed on the well. What this refers to is that some embodiments of the invention allow the transmission of a command sequence that was previously unknown to a downhole controller, such that the downhole controller would not have to be pre-programmed with a sequence to recognize the command signal. This increases the likelihood that a downhole controller will respond to a command sequence, since the transmitted command sequence does not have to match any particular pre-programmed sequence.

Even though Applicant believes that the term “*a priori*” is clear in the context of the Specification and claims, Applicant has amended the claims to restate “*a priori* unknown” with “previously unknown” or “previously undefined” in the claims. Note that the “previously” term

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is equivalent to the “*a priori*” term. *See, e.g.,* Wordsmyth-Dictionary for term “*a priori*” (attached).

In view of the foregoing, withdrawal of the objection is respectfully requested.

REJECTION UNDER 35 U.S.C. § 102

With respect to claim 1, Harmon does not disclose a controller that is responsive to a repeating command signal, where the command signal was previously unknown to the controller, and the controller is responsive to the repeating command signal by actuating a tool. In Harmon, the downhole controller recognizes a command sequence based on a pre-programmed menu (in other words, to cause the controller to actuate a downhole tool, the command sequence received by the downhole controller must match a pre-programmed sequence). As explained by Harmon, a surface system controller 120 executes commands according to pre-programmed instructions or menus and transmits coded signals to a seismic signal source 110. Harmon, 5:59-63. The system controller computer 280 of Harmon translates instructions from a human operator into a coded command sequence according to a project plan as embodied in a series of pre-programmed project menus. Harmon, 7:60-63. The system controller computer 280 transmits to the seismic source system 110 a “fire” or other command at a time determined by the master clock 285 and the project menus. Harmon, 7:65-8:1. The seismic source transmits a series of seismic shots in accordance with the pre-programmed menu structure. Harmon, 13:23-26. At the downhole end, the downhole controller 140 uses “the same menu processed by the system controller 120 [at the surface] to interpret the signal that was transmitted by the seismic source 110.” Harmon, 16:7-13. Thus, Harmon is very clear that the downhole controller 140 interprets a command signal based on a pre-programmed menu that is also used at the surface. Therefore, any command sequence that is to be recognized by the downhole controller 140 of Harmon must be *known* to the controller, which contradicts the subject matter of claim 1.

Therefore, claim 1 is not anticipated by Harmon.

The remaining independent claims 10, 16, and 18 are allowable over Harmon for similar reasons.

Dependent claims, including newly added dependent claims 21-27, are allowable for at least the same reasons as corresponding independent claims.


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Allowance of all claims is respectfully requested. The Commissioner is authorized to charge any additional fees and/or credit any overpayment to Deposit Account No. 20-1504 (SHL.0302US).

Respectfully submitted,

Date: _____

Dec. 15, 2005



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a priori

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Syllables: a priori



Part of Speech

adjective



Pronunciation

e prai o ri

e pri o ri

e prai o ri

a pri o ri

Definition

1. proceeding from cause to effect or from the general to the particular; deductive.

Example

a priori reasoning. (Cf. a posteriori.)

Definition

2. based on hypothesis, theory, fixed rules, or established forms rather than on experience or experiment.

Definition

3. before or without analysis or examination.

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